Guide

CTS 602 by Nilan

Advance for Comfort CT150

Version: 10.00 13-04-2014
Software-version: 2.30

NILAN®
OUTSTANDING INDOOR CLIMATE

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General Information

Please make sure that the following papers are delivered with the device:

- CTS 602 Instruction
- Electrical chart

For questions regarding montage/installation please look at the user manual.

The purpose of this guide is to be able to configure wishes which are not in the standard factory settings.

The plant is designed for heat recovery with air volumes up to 150 m3/h. The energy from the exhaust air is transferred to the incoming air through the counter current exchanger, the two air streams pass each other without directly contact.

The plant must be started immediately after installation and connection to the canal system. When a ventilation system is not running the damp air from the rooms will penetrate up into channels and installations and dispose condensation water. Condensation water can drain out of the valves and damage furniture or flooring, condensation water in the system may damage the electronics and the fans.

The configuration of the system is performed using the Advance and the operation of the system is performed with the Basic panel.

After the configuration of the plant, Basic must be reconnected.

The plant is delivered tested and ready for operation. Installation and commissioning must be performed by a certified person.

Temperature sensor overview

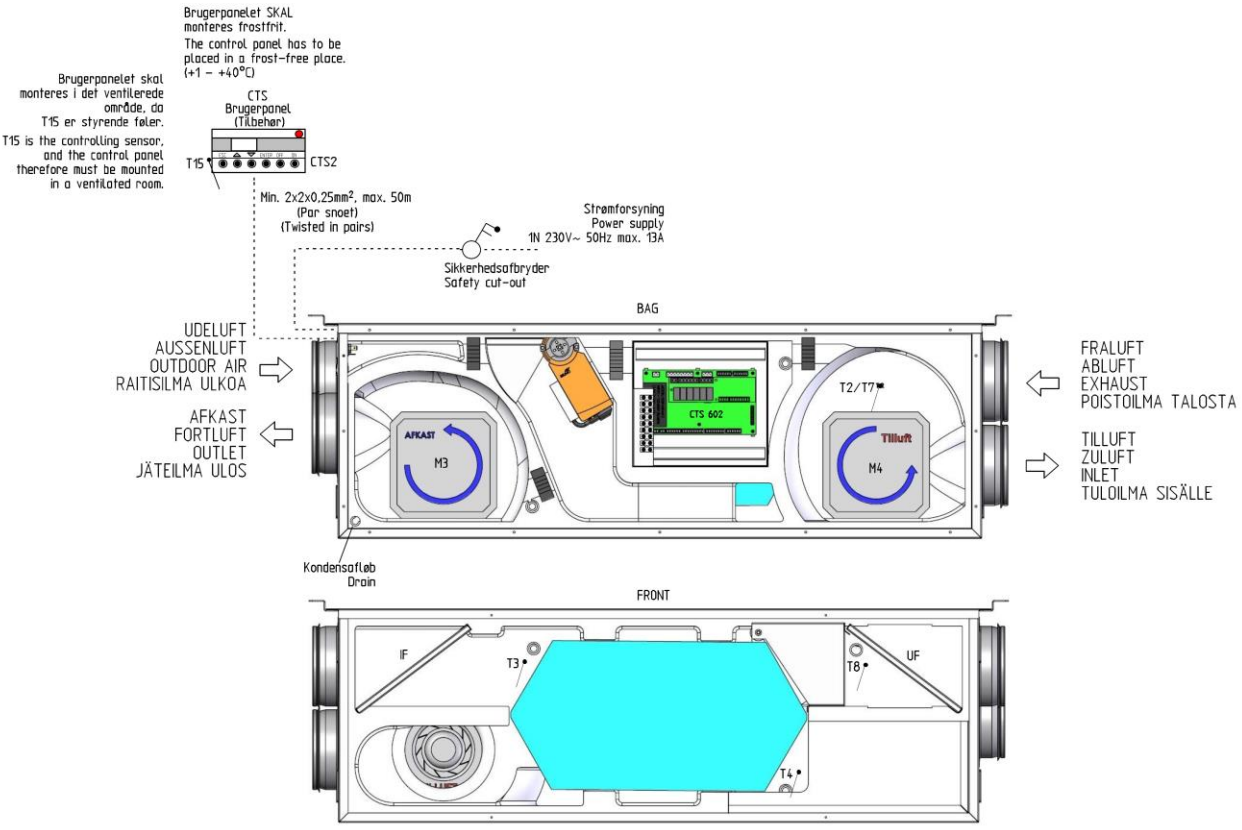


Figure 1: Diagram illustrating sensor location for Comfort CT150

Key to sensors described in figure 1:
T2 is the temperature sensor at the inlet ventilator (without heating surface).
T3 is the temperature sensor in the exhaust at the intake.
T4 is the temperature sensor in the outlet.
T7 is the temperature sensor in the inlet after the heating surface.
T8 is the temperature sensor in the outdoor air at the intake.
T9 is the temperature sensor of the heating surface.
T10 is the temperature sensor in the exhaust (accessory).
T15 is the temperature sensor located inside the Advance control panel.

The temperature currently recorded by the various sensors can be seen in the VIEW DATA menu.

Advance panel

On the CTS 602 control panel, press:
- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

Figure 2: Advance control panel

The yellow LED on the front of the control panel indicates the following:
Constantly lit: compressor in operation
Flashes: system in alarm condition

The control panel can display 2 lines of text, each containing 8 characters.
The upper line consists of explanatory text.
The lower line contains the setting or settings associated with the parameter described by the explanatory text.

The text shown on the display remains "lit" as long as the system is connected to the power supply. It will thus remain lit even if the system is turned off or if the control panel has not been operated for some length of time.

Using the menus

To change a setting or function, the relevant menu must first be accessed by pressing ▲ or ▼.

To activate the required menu, press **ENTER**.

To change the setting of the required parameter, press and hold **ENTER** until the value flashes.

The setting can then be changed to the required value using ▲▼.

To save the new setting, press **ENTER.**

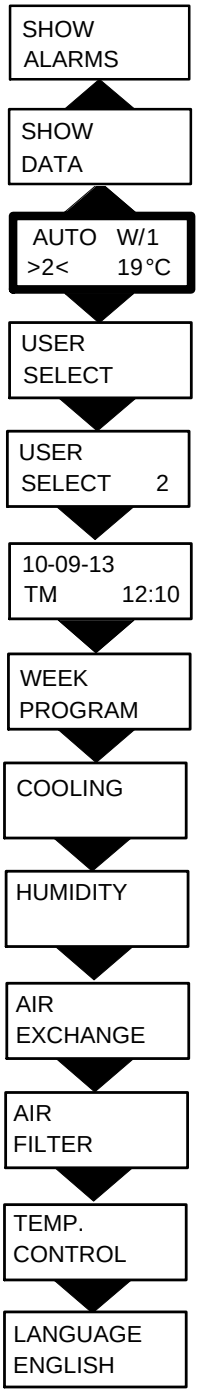
If no buttons are pressed for one minute, the controls automatically return to the main menu.

If the controls return to the main menu during system configuration, any new data will be automatically stored if they have been saved by pressing **ENTER.** It is always possible to continue configuring the system by returning to the point reached.

Menu overview

Menus

Usually, the main menu will be displayed on the control panel (i.e. the menu in the bold box in the overview below). From here, it is possible to scroll through all the other menus using ▲▼.



Alarm display and reset.
Alarm log containing the latest 16 alarms.

Operating mode (heat, auto, cool), temperatures, fan speed, type of unit and software version.

Main menu: displays operating status.
Press ESC to return to the main menu.

Options: exhaust, inlet, ventilation, OFF. The function selected is activated via a switch or pressure.

User select 2 as user select

Date and time settings. The time and date must be reset if the system has been without power for more than 24 hours. Summer and winter time must also be set manually.

Weekly program can be set to ON or OFF. When the program is active, 1, 2 or 3 is displayed in the main menu.

Option for choosing a higher ventilation level when the system is cooling via open bypass valve.

Offers the option to set a higher/lower fan speed at a high/low humidity level

Opportunity for a low ventilating step at low outdoor temperatures.

The controls are factory set to activate a filter alarm every 90 days. The alarm is reset in the VIEW ALARMS menu.

Setting the minimum temperature required in order for the bypass valve to close. Maximum inlet air temperature can be set for a heating element.

Select the required language: English, German, French, Swedish, Danish, Norwegian or Finnish.

Figure 3: Menu overview

Operating status

Three parameters are shown in the main menu: operating mode, ventilation step and temperature. These parameters determine operating status and are set by the user.

When the plant is connected electrically the ON button on the Advance must be activated enabled for the systems starts and data is displayed in the main menu. (After about 15 seconds).

By pressing ESC one or more times you will automatically return to the main menu.

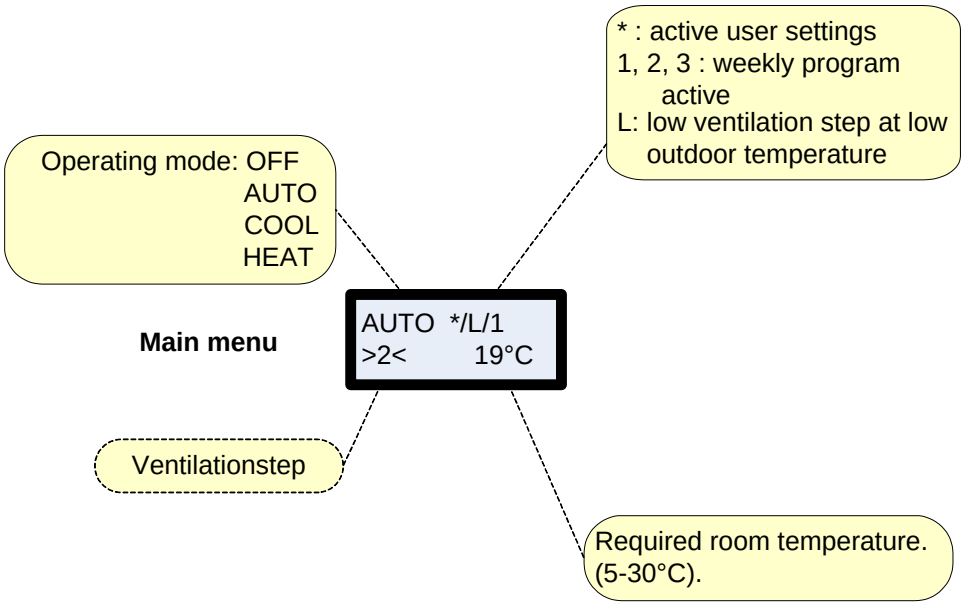


Figure 4: Main menu

The required room temperature can be set by pressing **ENTER** once. The number beside °C will begin to flash and the setting can then be changed using ▲▼. Finally, confirm the new setting by pressing **ENTER.**

As for systems without a post-heating element, the display shows the current room temperature.

Operating mode can be changed by pressing **ENTER** twice. The current mode will begin to flash, allowing it to be changed using ▲▼ and confirmed by pressing **ENTER**. When the system is set to “Auto”, the bypass valve opens and closes automatically, depending on the temperature setting. “Cooling” means that the bypass valve is open, and “Heating” means that it is closed.

Ventilation step can be changed by pressing **ENTER** three times. The current ventilation step will begin to flash, allowing it to be changed using ▲▼ and confirmed by pressing **ENTER**.

Main menu

The main menu is displayed approx. 15 seconds after the power has been connected. Options that flash are indicated by ” ”.
The options available on the main menu are shown in the figure below:
You will always return to the main menu if you press ESC one or more times.

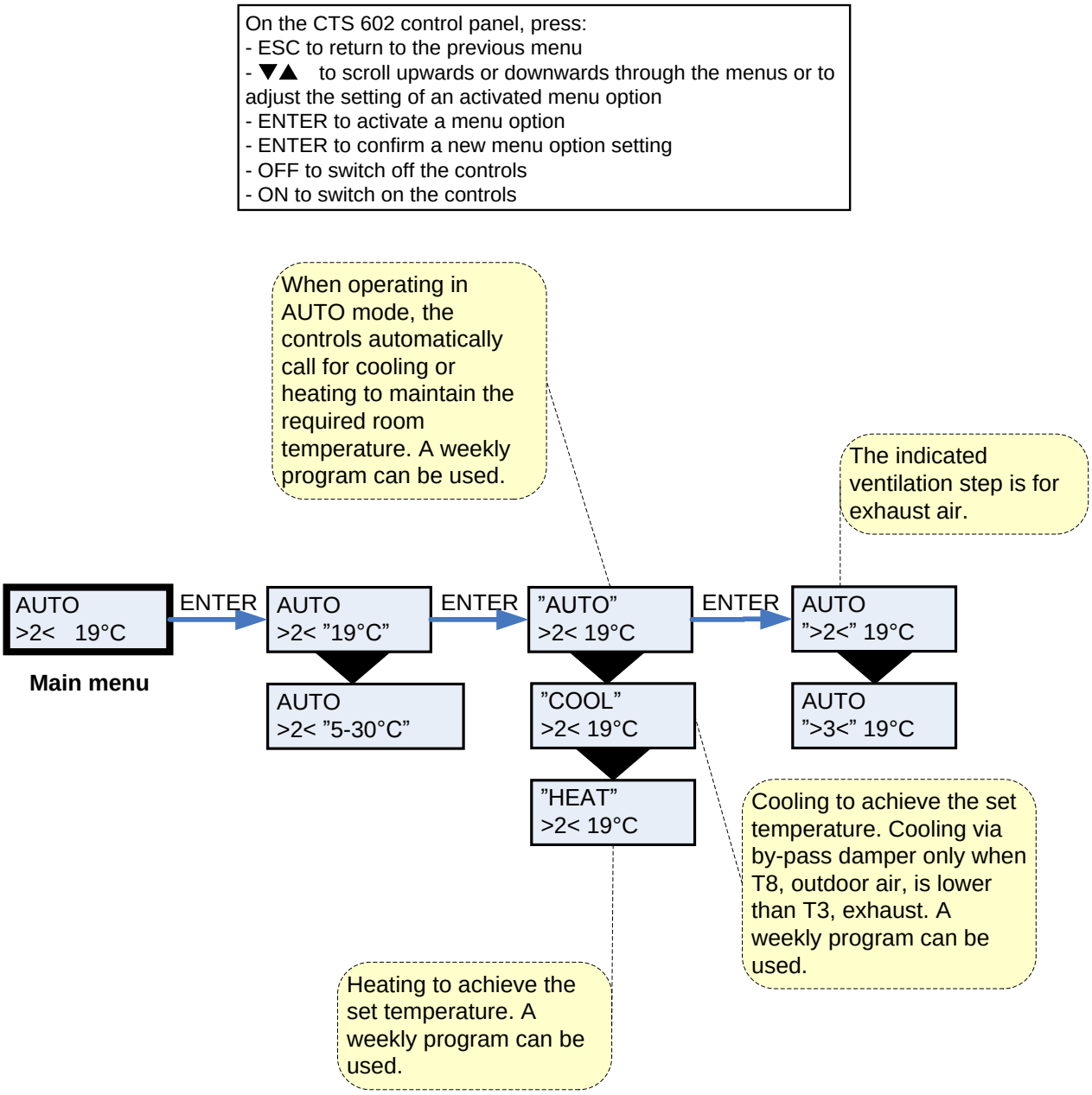


Figure 5: Main menu options

Show alarms

If an alarm condition occurs, the yellow LED on the Advance control panel will begin to flash.

The SHOW ALARMS menu allows users to identify the alarm condition and the time at which it occurred. Alarms can also be reset in this menu.

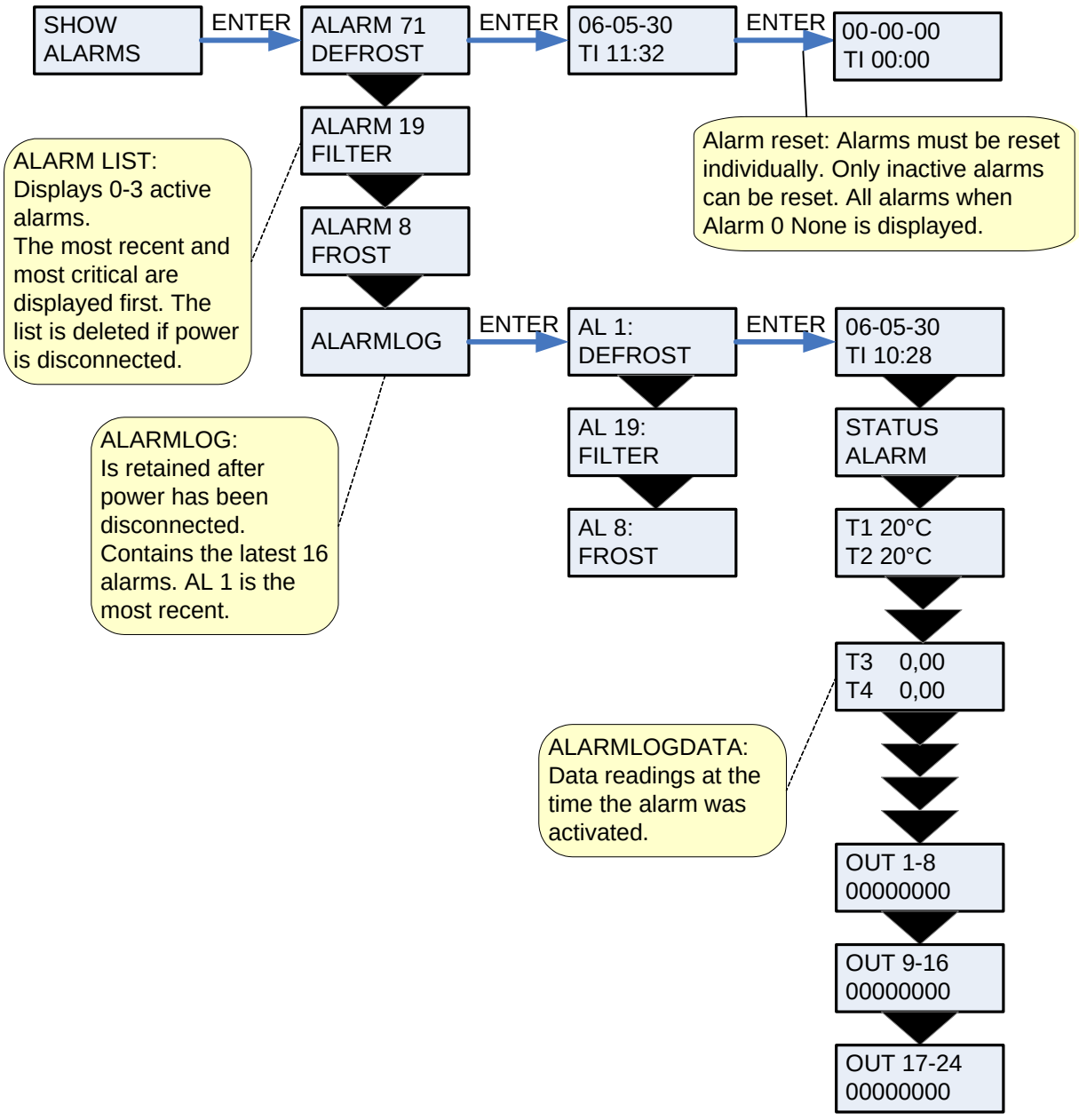


Figure 6: The "Show alarms" menu

Alarm codes are given for specific alarm situations or where users are to be provided with important information.

Alarms are grouped in the following categories:

C	**Critical**	Operation partially or totally discontinued as long as the alarm situation persists.
W	**Warning**	Situation will become critical if not remedied within a reasonable period of time.
I	**Informative**	Standard operation is not affected. The alarm is reset as soon as the user acknowledges it.

Alarm code	***Category***	***Display text***	***Description/cause***	***Remedy***
00	*--*	*--*	*No alarm*	
01	*C*	*HARDWARE*	*Fault in controls hardware.*	*Reset controls. Contact service centre if fault persists.*
02	*C*	*TIMEOUT*	*Warning alarm (W) has become a critical alarm.*	*Make a note of the alarm and reset.* *Contact service centre if alarm persists.*
03	*C*	*FIRE*	*Fire detecting thermostat.* *Unit is stopped because the fire detecting thermostat has been activated.*	*If there has not been a fire please contact service.*
07	*C*	*FROST*	*1) Frost-protection of heating surface: the inlet air over the heating surface is too cold which can be caused because the by-pass damper is open.* *2) The water from the central heating is too cold.*	*1) Close by-pass damper, activate heating surface and reset alarm.* *2) Check that the heating supply for the heating surface is OK. Reset alarm when fault has been repaired.*
08	*C*	*FROST*	*One of the temperature sensors in the unit is short circuit or defect.*	*Note the sensor and contact service.*
09	*C*	*OVERTEMP*	*One of the temperature sensors in the unit is disconnected or defect.*	*Note the sensor and contact service.*
10	*C*	*OVERHEAT*	*Electrical heating surface has been overheated due to lack of airflow.*	*Check filters, air intake and ventilators. Reset alarm. Contact service centre if system fails to operate satisfactorily.*
11	*C*	*AIRFLOW*	*Lack of airflow in inlet. See alarm code 10.*	*See alarm code 10*

Alarm code	Category	Display text	Description/cause	Remedy
15	W	ROOM LOW	If room temperature falls below 10°C, the system will stop operating in order to prevent further cooling. This could, for example, occur if the house is unoccupied and the heating system switched off.	Switch heating on and reset alarm.
16	I	SOFTWARE	Error in controls software.	Contact service centre.
17	I	WATCHDOG	Error in controls software.	Contact service centre.
18	I	SET	System configuration has been partially lost. Can be caused by prolonged lack of power or lightning. The system will continue to operate using standard settings.	Reset alarm. Configure weekly program as required. Contact service centre if system fails to operate satisfactorily or as it did before as subsettings may have been lost. (Such subsettings can only be accessed by a service technician.)
19	I	FILTER	The system is set to activate an alarm for filter inspection/replacement after a specific number of days (30, 90, 180 or 360 days). The default setting is 90 days.	Clean/replace filter. Reset alarm.
21	I	SET TIME	Occurs during power failure.	Check weekly program settings and reset if necessary. Reset alarm.
22	I	T AIR	The heating of the set temperature cannot be reached. Heating surface and system cannot lift the temperature to the required level.	Set a lower inlet temperature. Reset alarm
27-57	C	T_x SHORT	One of the temperature sensors connected to the system has short-circuited/is defective. Short-circuited sensor = +99°C	Make a note of which sensor (T_x) has short-circuited (e.g. T1 short) and contact service centre.
28-58	C	T_x OPEN	One of the temperature sensors connected to the system has been disconnected/is defective. Disconnected sensor = -40°C	Make a note of which sensor (T_x) has become disconnected (e.g. T1 discon) and contact service centre.
71	W	DFR EXCH	The maximum defrosting time for the counter flow heat exchanger has been exceeded. This could be due to the fact that the system has been exposed to very low temperatures.	Contact our after sales department if resetting the alarm does not help. If possible, inform the after sales department of the current working temperature from the menu SHOW DATA.
91	I	OPTIO	Accessories circuit board	Contact service centre.
92	i	PRESET	Error by writing or input of the electrician's adjustments	Contact service centre.

Show data

Current operating data are displayed in the SHOW DATA menu.

The location of the various sensors is shown in figure 2 on page 5.

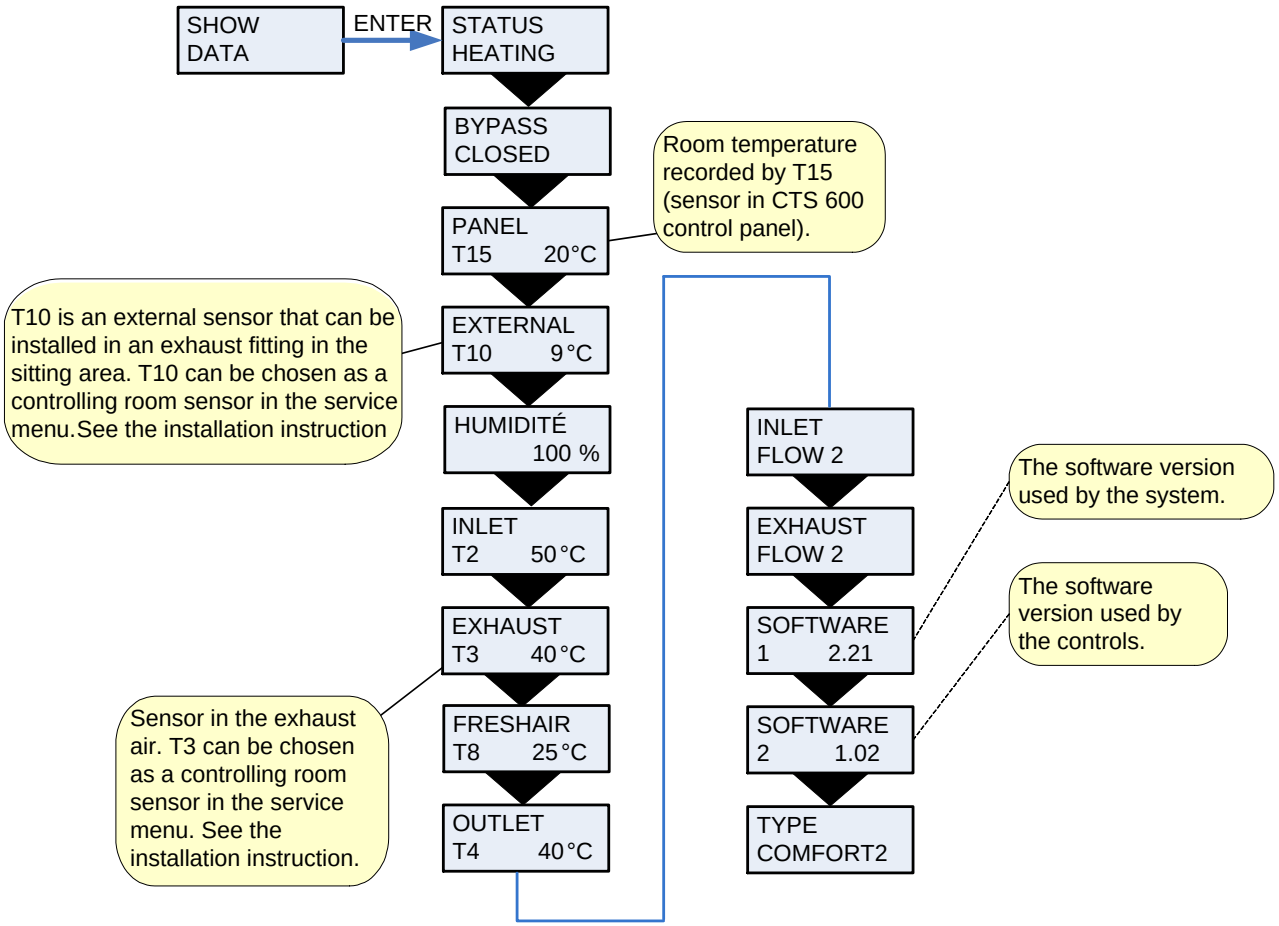


Figure 7: The "Show data" menu

User options

The menu CUSTOM OPTIONS overrides the operating mode of the main menu by activating an external switch.

”VENTILAT”: There is a possibility here to run with a higher or lower speed on the air exhaust and air inlet for a limited amount of time. The external pressure will activate the function. The function has high priority.

”exhaust” and ”inlet”: These two options increase or reduce the velocity of the exhaust or inlet air respectively for a limited period of time. The remaining functions of the operating mode remain unaltered. An external switch activates the timer function.
Another external switch ensures that the fans remain at the desired ventilation level until the switch is turned off.

”extend”: This option controls the velocity of the exhaust and inlet air and can be used to change the temperature of the inlet air for a limited period of time. An external switch activates the timer function.

“OFF”: Deactivates the external switch.

”ext offs”: Provides the possibility of choosing an afterflow time and changing the set point in external rooms.

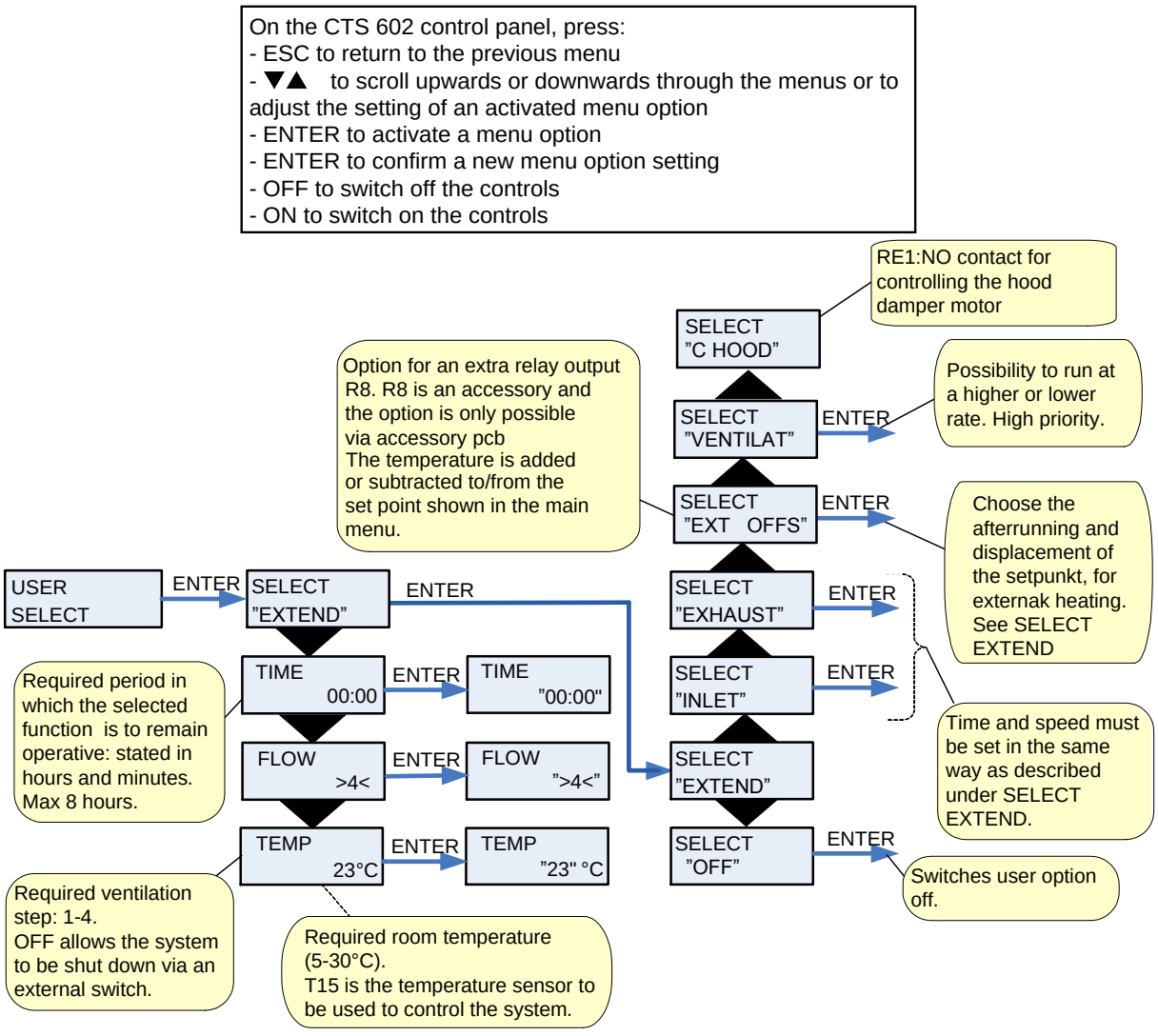


Figure 8: The "User select" menu

User select 2

User select 2 as user select. (Only if the option board is installed)

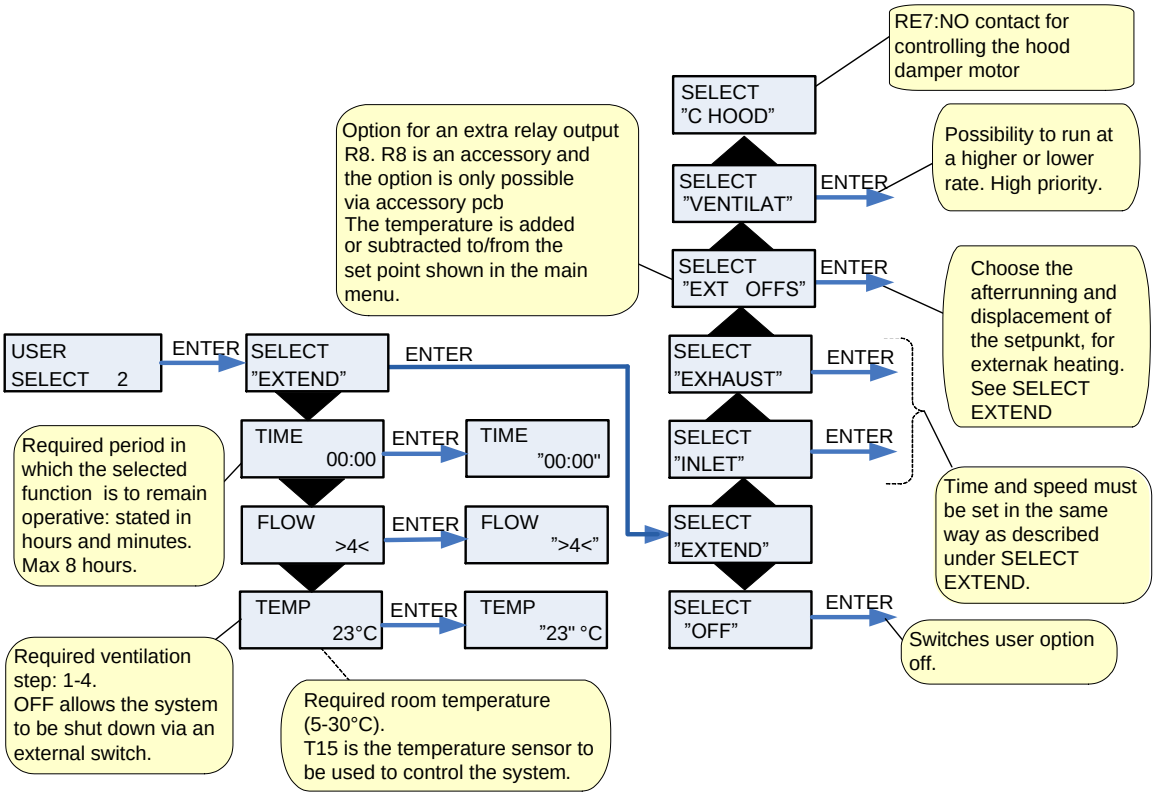


Figure 9: The "User select" menu

Date and time

The clock will continue to operate for at least 24 hours during power failure. If date and time settings are lost, the "Set time" alarm will be activated.

Remember to set summer and winter time manually.

Options that flash are indicated by ” ”.

On the CTS 602 control panel, press:
- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

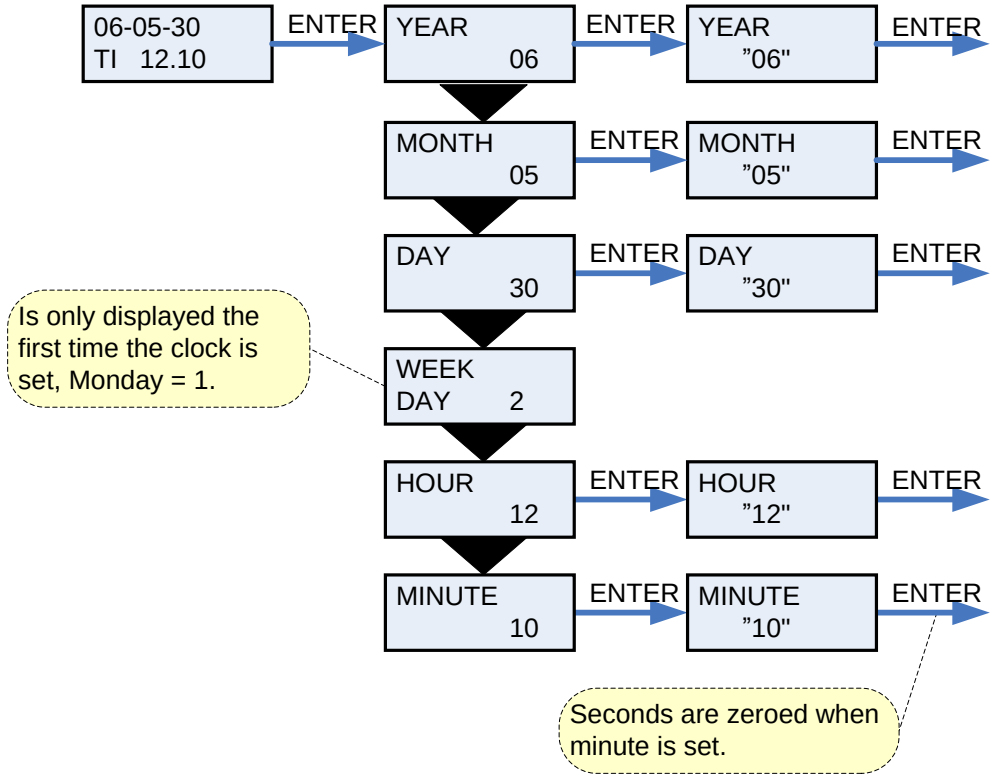


Figure 10: The "Date and time" menu

Weekly program (Not valid for Basic/COMFORT2)

The controls offer a choice of 3 weekly programs.
The controls are factory set to OFF.

In addition to these programmes it is possible to programme your own week programme which can be one of the standard programmes with minor alterations.

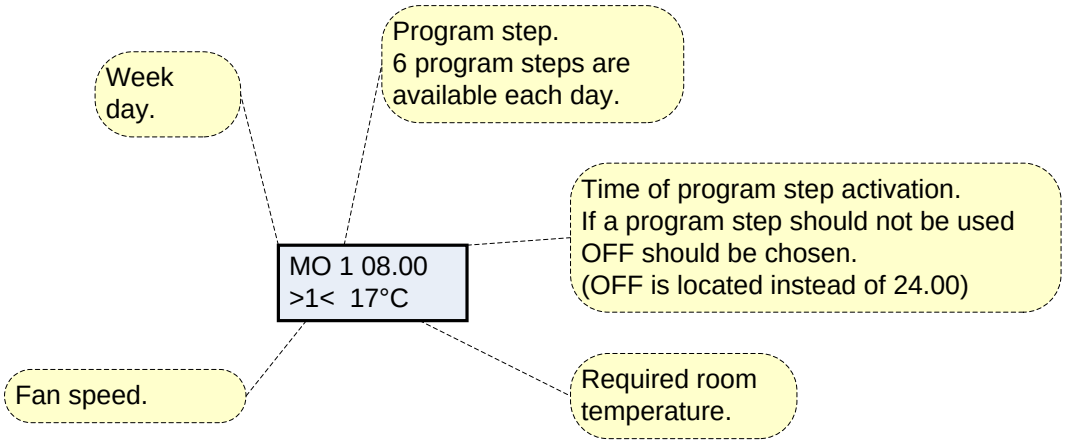
Options that flash are indicated by ” ”.

Factory settings for the 3 weekly programs:

Program 1 is suitable for the working family
Program 2 is suitable for the non-working family
Program 3 is suitable for offices

Program	*Week day*	*Function*	*Time*	*Ventilation*	*Temperature*
Program 1	*Monday - Friday*	*1* *2* *3* *4*	*6.00* *8.00* *15.00* *22.00*	*3* *1* *3* *1*	*21* *21* *21* *21*
	Saturday - Sunday	*1* *2*	*8.00* *23.00*	*3* *1*	*21* *21*
Program 2	*Monday - Sunday*	*1* *2*	*8.00* *23.00*	*3* *1*	*21* *21*
Program 3	*Monday - Friday*	*1* *2*	*7.00* *16.00*	*3* *OFF*	*21* *21*

Weekly program settings



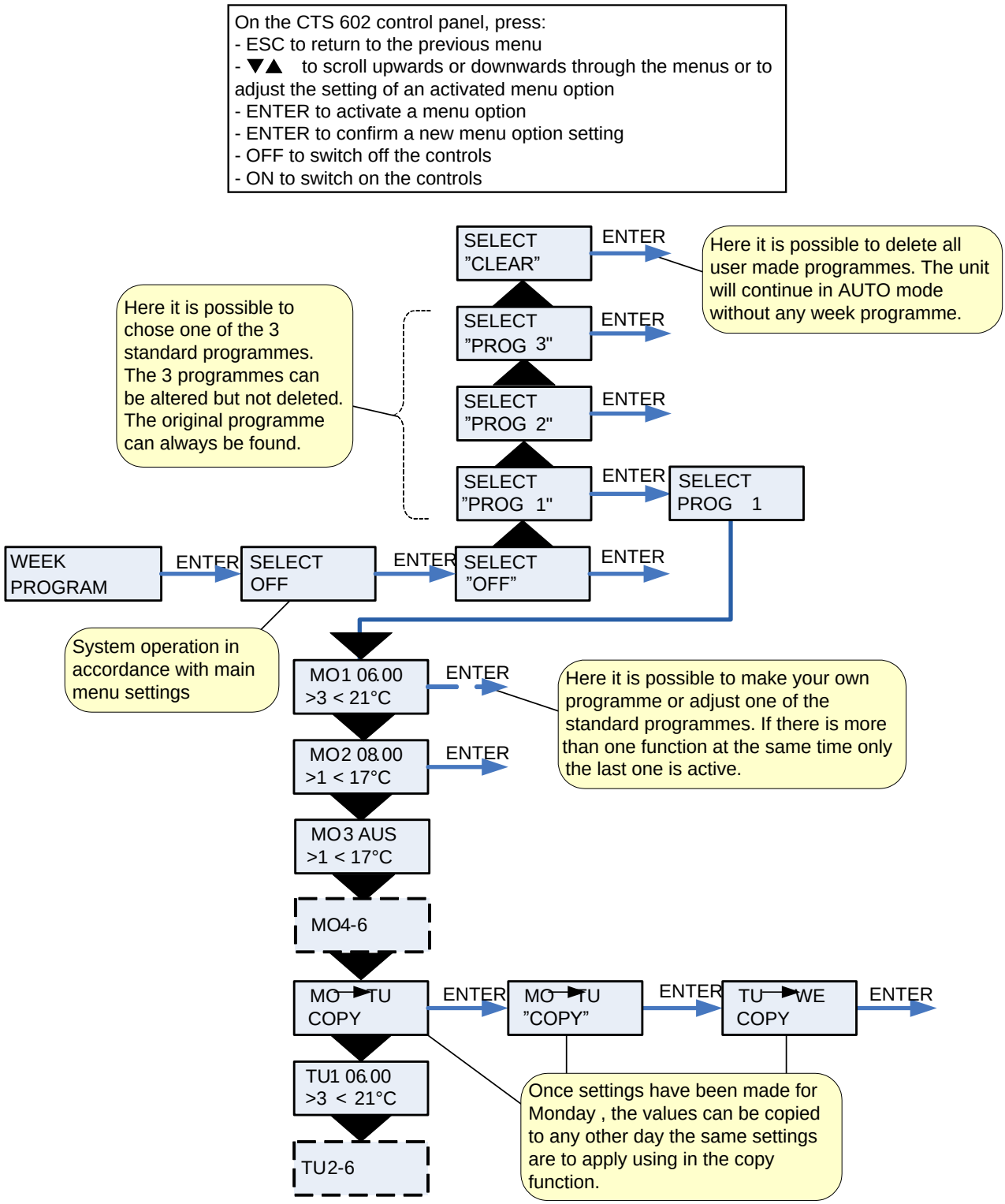


Figure 11: The “Week program” menu

Cooling

The Comfort range offers the ability to cool the air by opening a bypass damper. However, the system will still recover a minimum of heat when in bypass mode.

The menu COOLING allows you to set the system to automatically run at a higher/the highest ventilation level at high outside temperatures

Options that flash are indicated by ” ”.

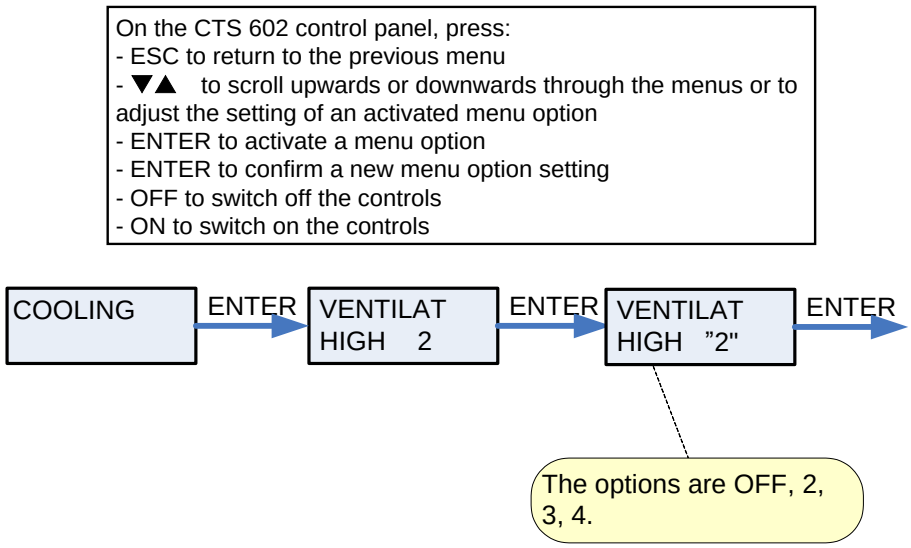


Figure 12: The "Cooling" menu

Humidity

In the “Humidity” menu it is possible to regulate the ventilation step in accordance with the humidity level.

In the “Humidity” menu it is possible to regulate the ventilation step in accordance with the humidity level.

Low ventilation step is only active in wintertime and at humidity levels below 30%.
High step is activated by a change from 10-5% of average RH from 40-80% over the last 24 hours
High ventilation step is deactivated when humidity drops 3% or more compared to the average humidity level the last 24 hours.

It can last up to 3 minutes before high/low ventilation step i stabilized.

” ” indicates that the menu point flashes and can be set to another value.

On the CTS 602 control panel, press:
- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

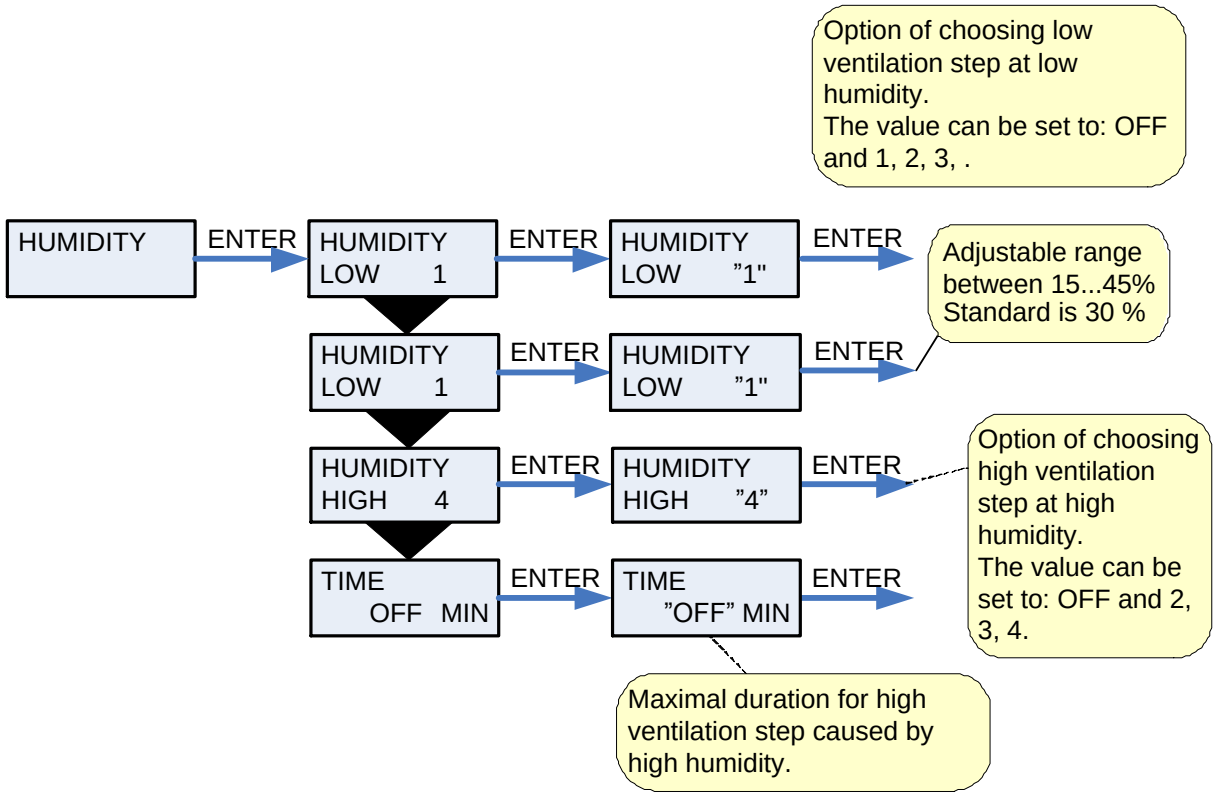


Figure 13: The " Humidity " menu

Air exchange

The menu AIR EXCHANGE gives the possibility of choosing a low ventilating step at low outdoor temperatures.

Options that flash are indicated by ” ”.

On the CTS 602 control panel, press:
- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

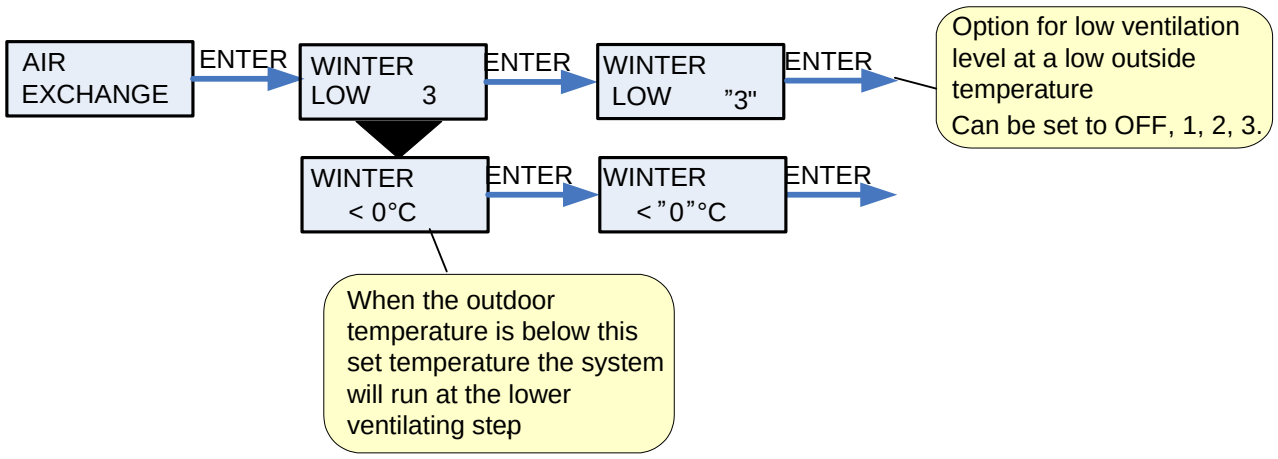


Figure 14: The "Air exchange" menu

Air filter (Not valid for Basic/COMFORT2)

The AIR FILTER menu allows users to select the interval at which they wish the controls to activate a filter alarm, reminding them that it is time to check/replace the air filter.

The system contains two plate filters in the inlet and exhaust duct, respectively. These filters must be controlled at least 3 times a year and replaced as required. The filters are replaced by dismounting the front cover and removing the filters. Please note that the system must be turned off when replacing the filters.

It is possible to install an extra box with a pollen filter EU7 in the inlet duct.

The controls are factory set to activate the alarm at 90 day intervals.

A filter guard can be installed above the system's filters/pollen filters.

Options that flash are indicated by **" "**.

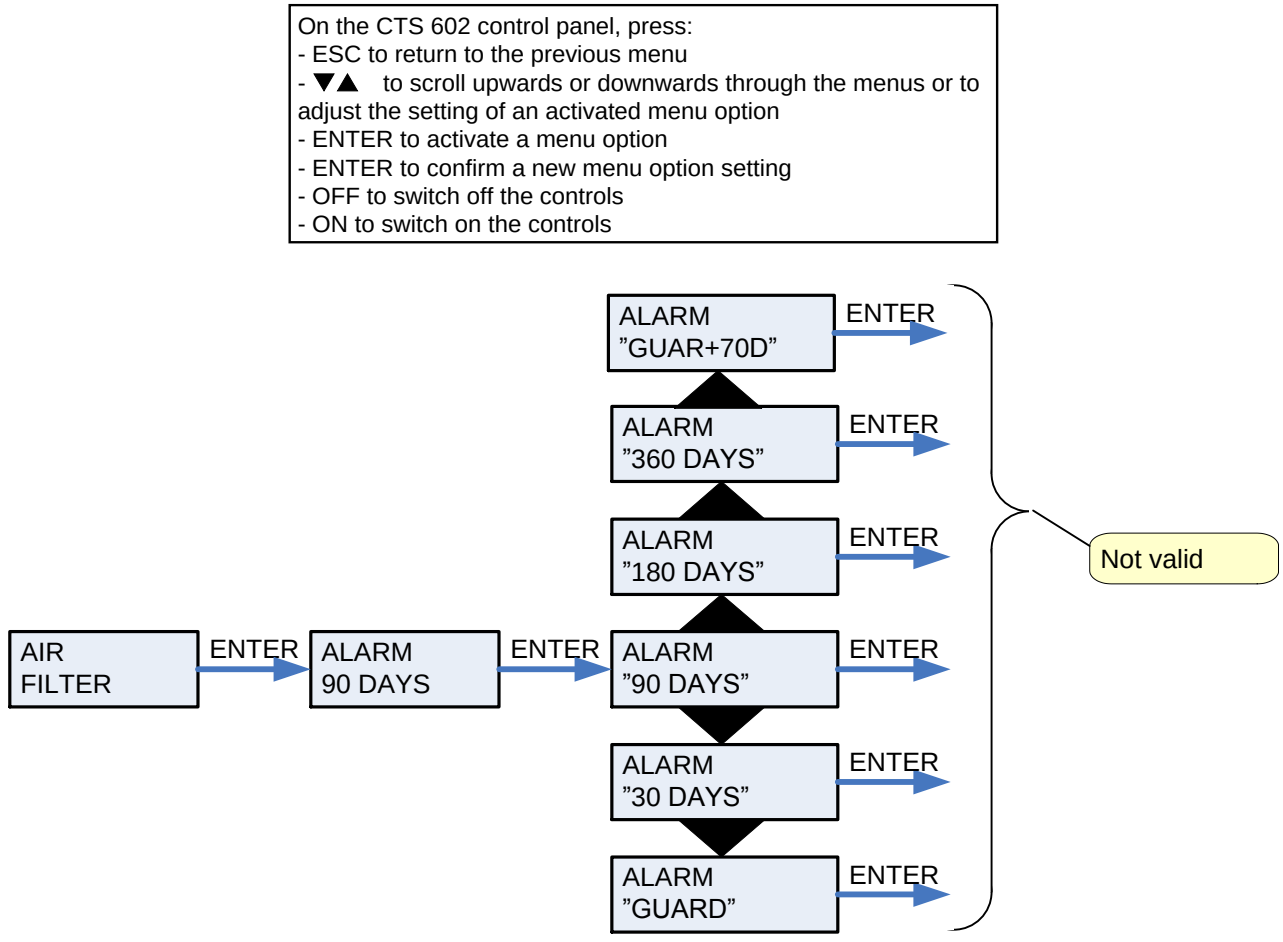


Figure 15: The "Air filter" menu

Temp. control

The TEMP. CONTROL menu allows active compressor cooling to be stopped at low outdoor temperatures.

Options that flash are indicated by ” ”.

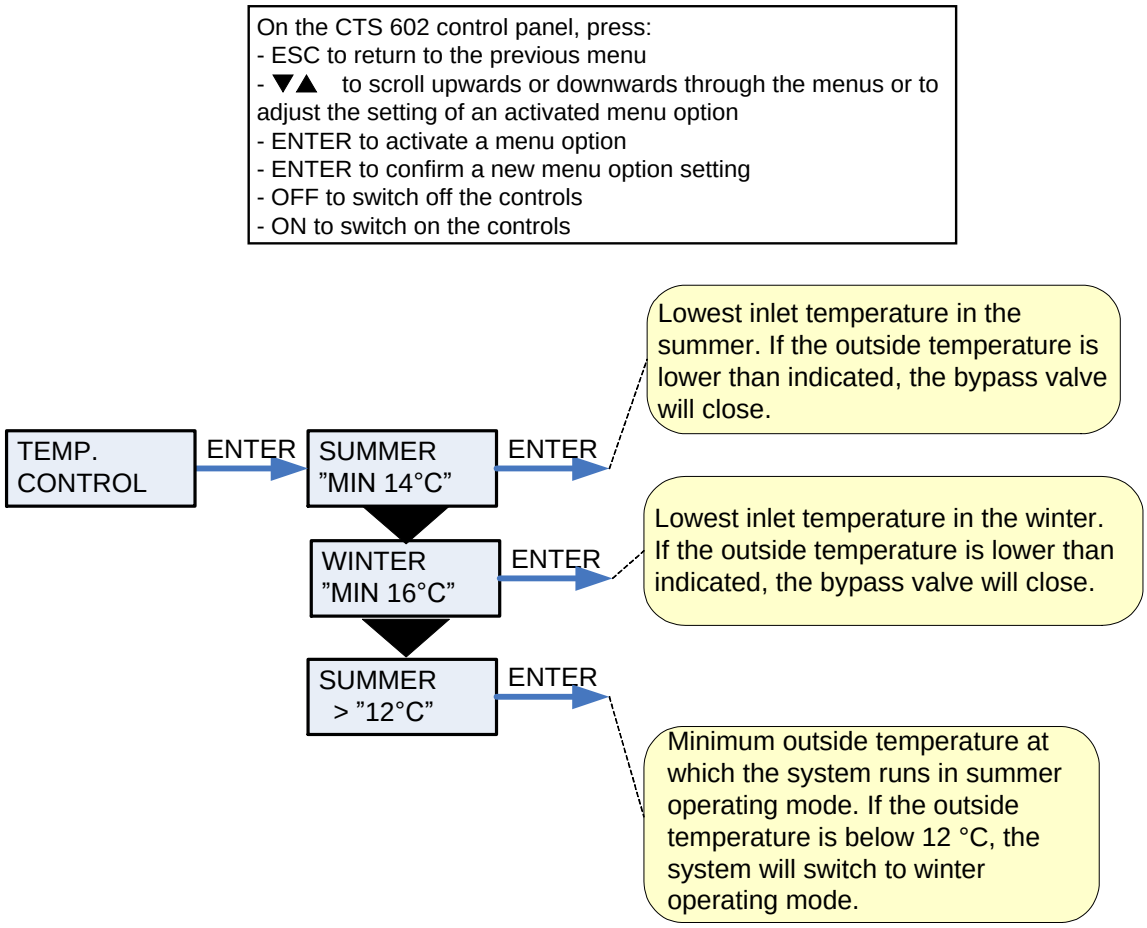


Figure 16: The "Temp. control" menu

Language

The language in which the displays are to be shown can be selected in this menu.

Options that flash are indicated by ” ”.

On the CTS 602 control panel, press:
- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

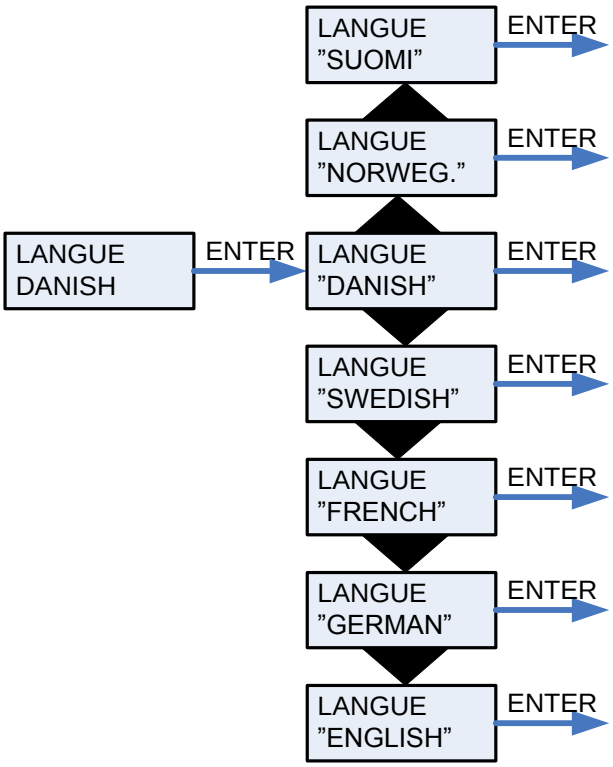


Figure 17: The "Language" menu

Activating the service menu

Press ▼ and **ENTER** at the same time for 10 seconds. The service menu is now available. Press ▼ multiple times until the panel shows **SERVICE**. Press **ENTER** to enter the service menu. It is now possible to move around in the menu by using ▲▼. The headlines of the service menu are shown below:

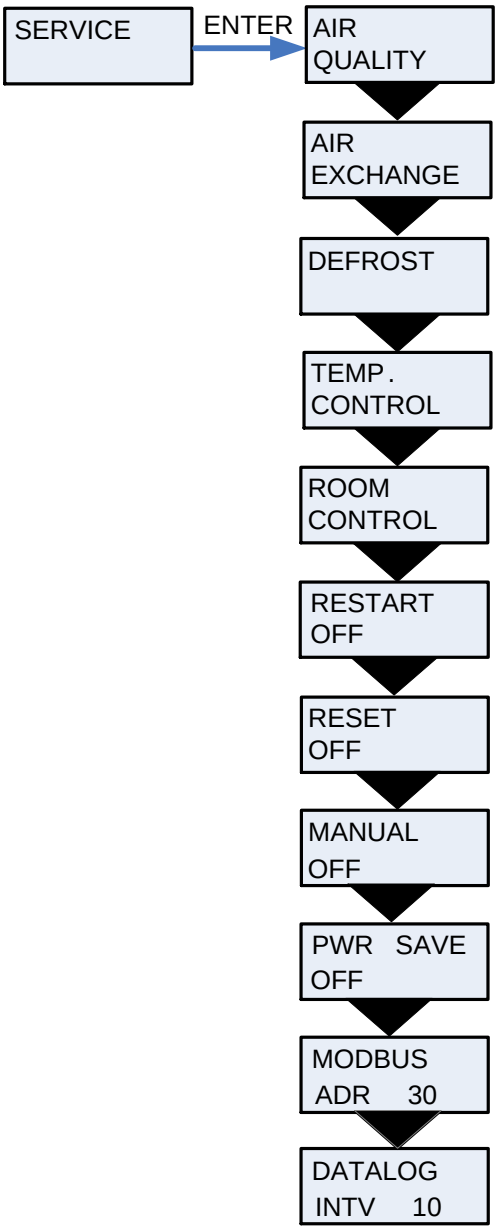


Figure 18: Headlines in the service menu

Air quality

In the ”Air quality” menu it is possible to choose between types of regulation: Humidity or OFF.

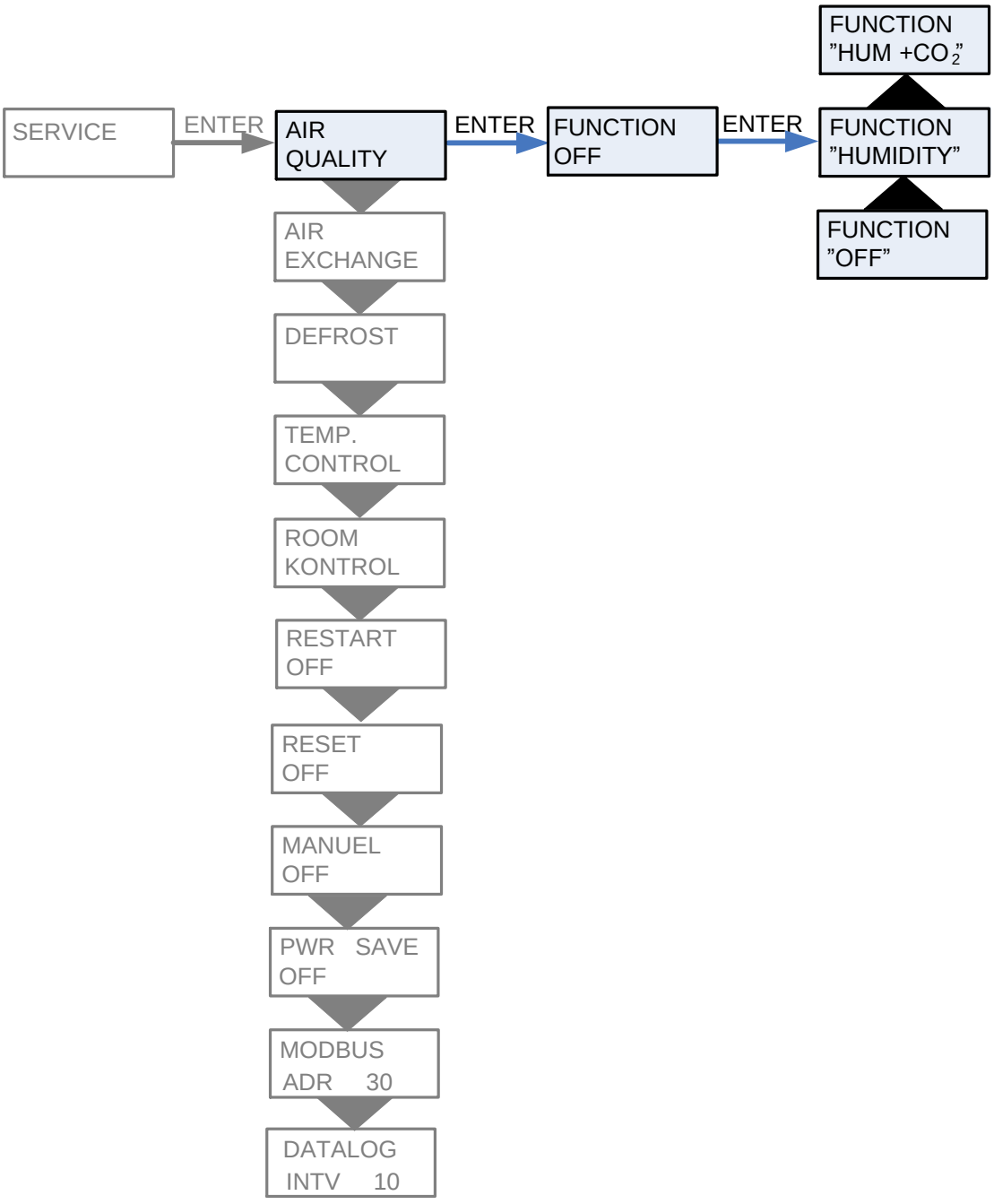


Figure 19: The “Air quality” menu

Air exchange

In the ”Air exchange” menu it is possible to adjust 4 steps of ventilation speed (air volume). Inlet and exhaust is to be adjusted individually at each level.

The inlet speed can be adjusted to a minimum and the exhaust can be adjusted to both a maximum and a minimum.

It is possible to delay the starting of the fan in order to give time to the register to open.

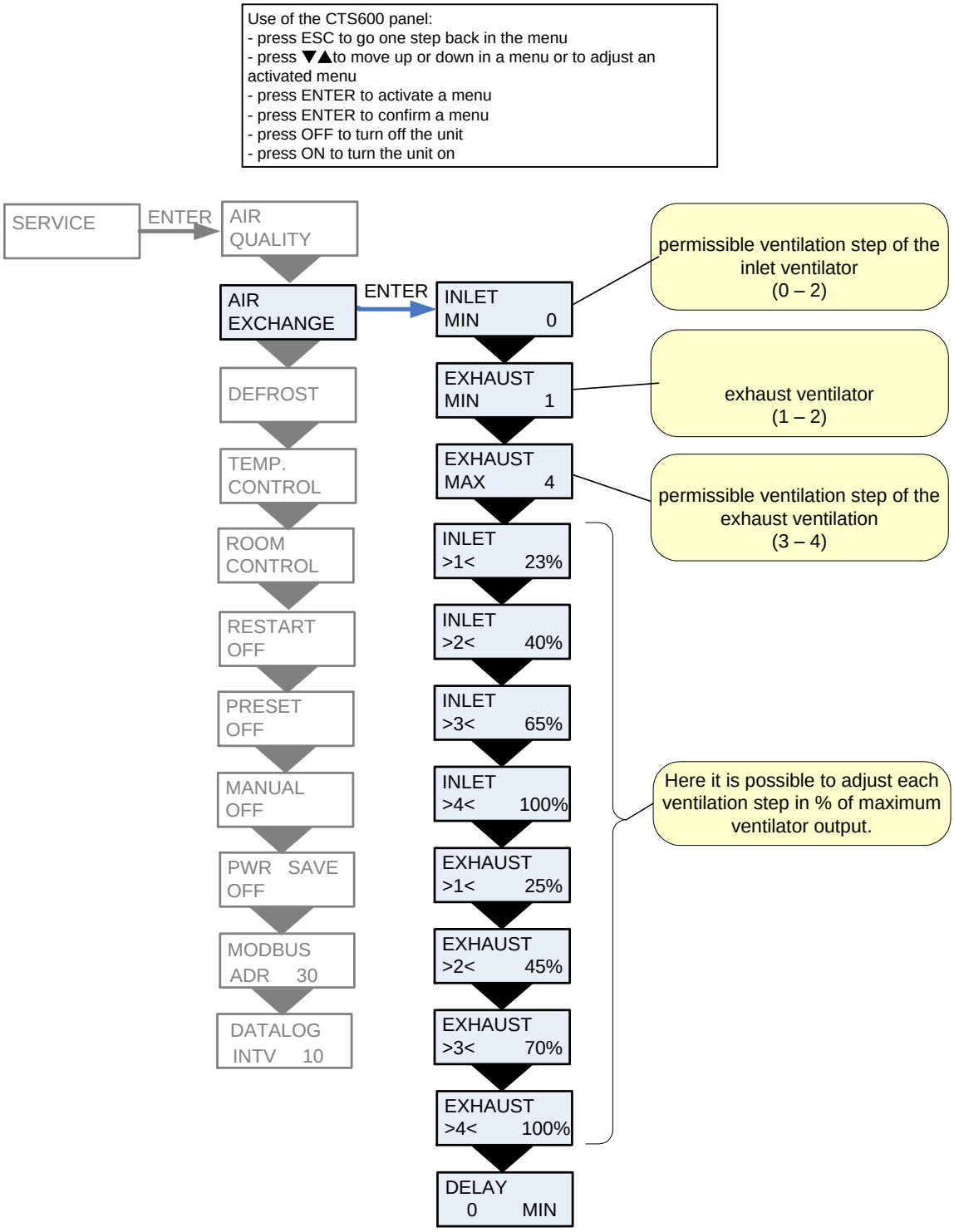


Figure 20: The "Air exchange" menu

Defrost

In the ”Defrost” menu it is possible to chose how the unit should perform during defrosting of the evaporator in the exhaust.

” ” indicates that the menu point flashes and can be set to another value

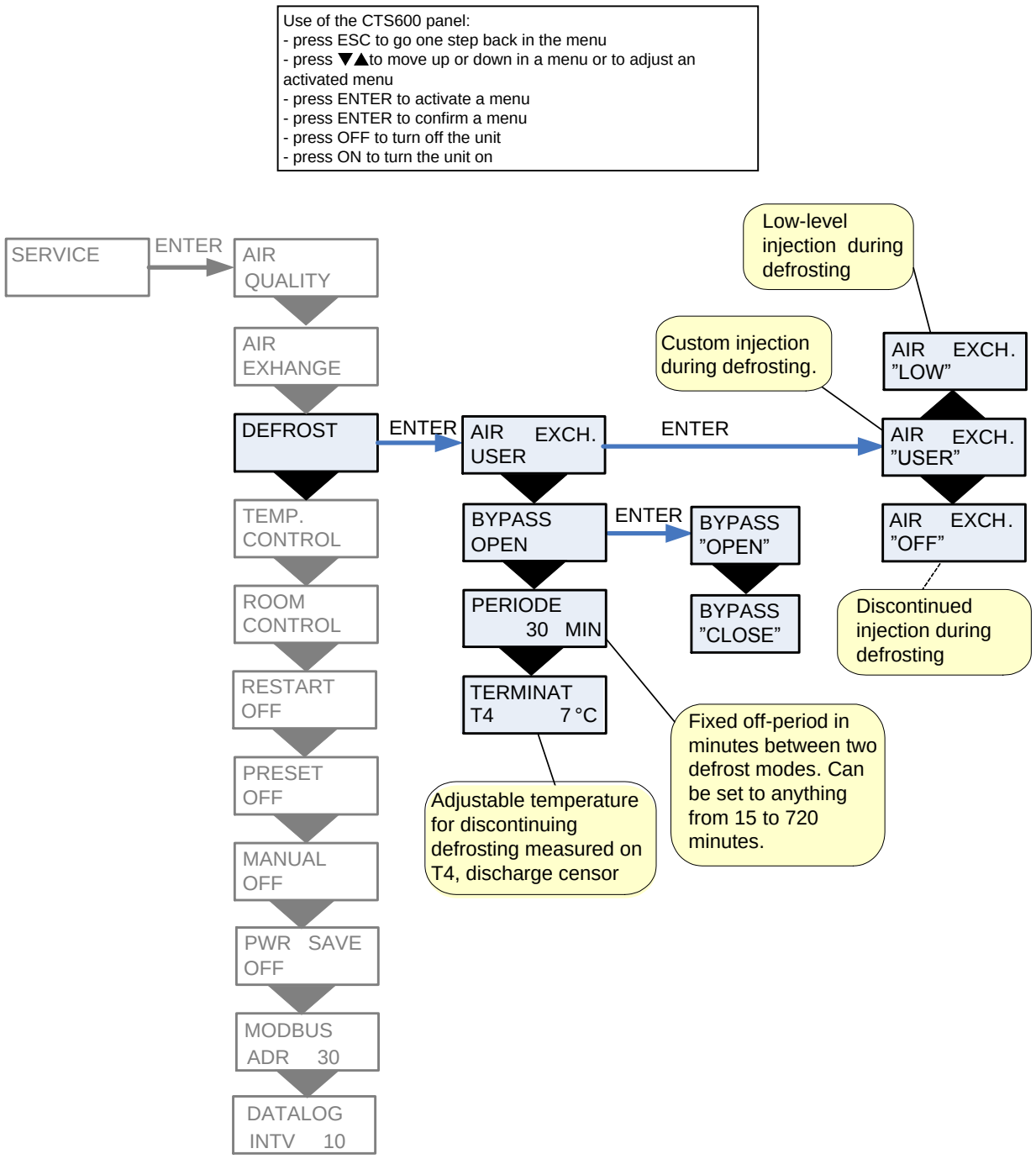


Figure 21: The "Defrost" menu

Temp. control

In the ”Temp. control” menu it is possible to chose a room temperature where the unit stops in order to avoid further cooling of the building if the primary heating shuts down.

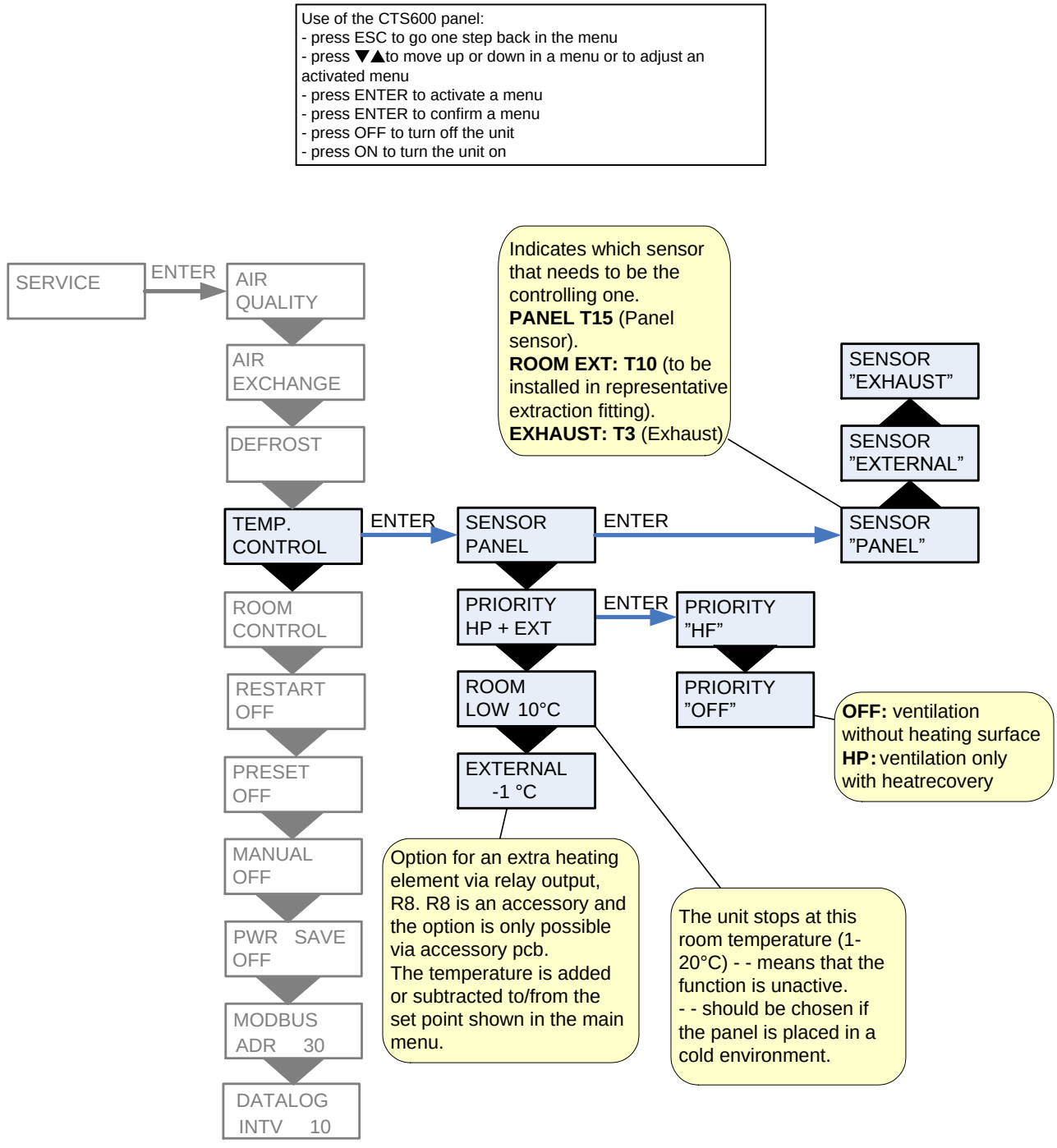


Figure 22: The "Temp. control" menu

Room control

In the ”Room control” menu it is possible to adjust the regulator for controlling the room temperature.

The ”Room control” menu should only be adjusted by persons with knowledge of control engineering.

” ” indicates that the menu point flashes and can be set to another value.

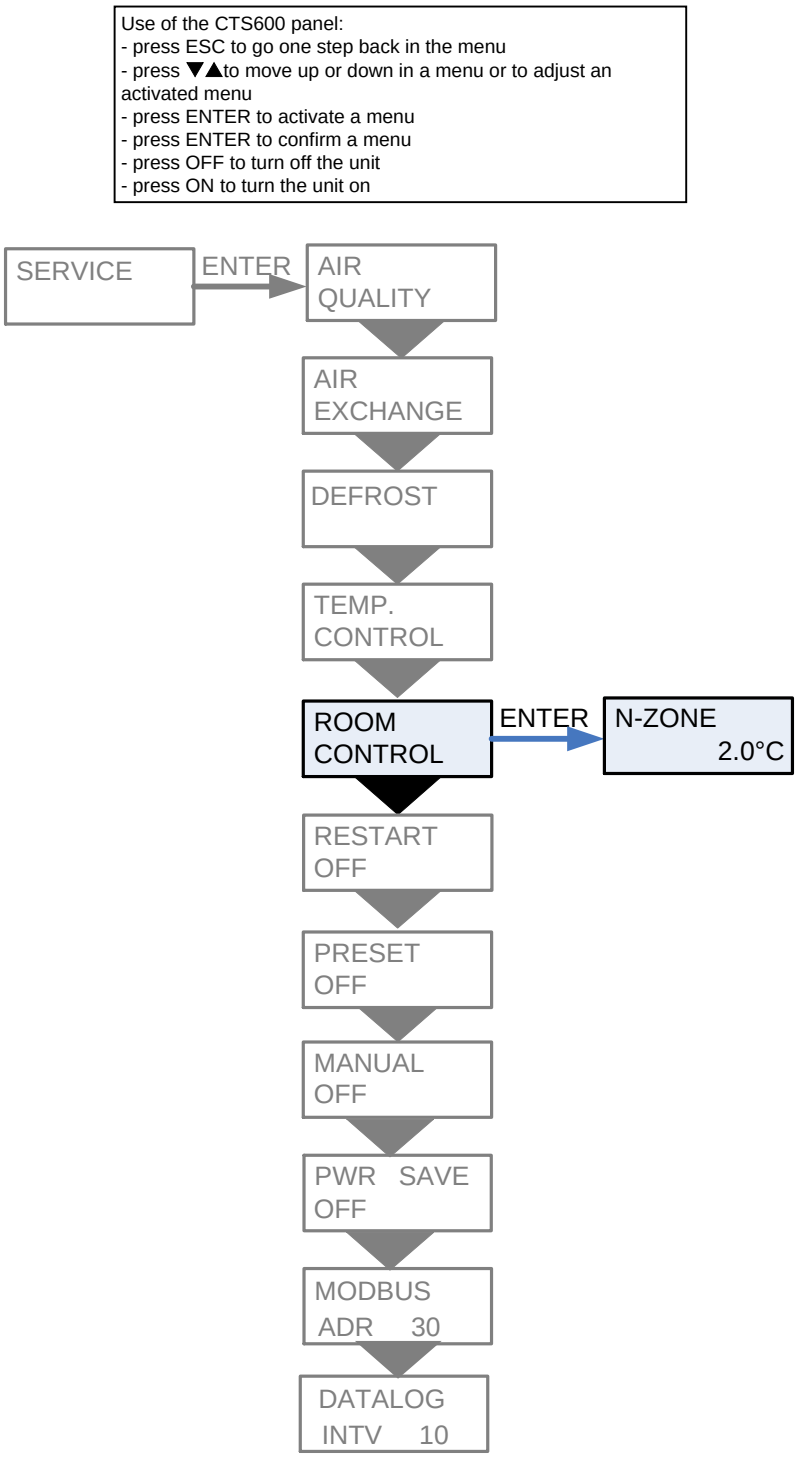


Figure 23: The "Room control" menu

Genstart

Acknowledge of FIRE alarm.
Fire alarm (code 3) it can be acknowledged automatically by elections in SERVICE-RESTART menu:
[OFF, FIRE]
Fire alarms can be acknowledged automatically during fire drills / testings. It is a precondition of the acknowledgement, that the fire thermostat entry has returned to the normal condition (closed switch).

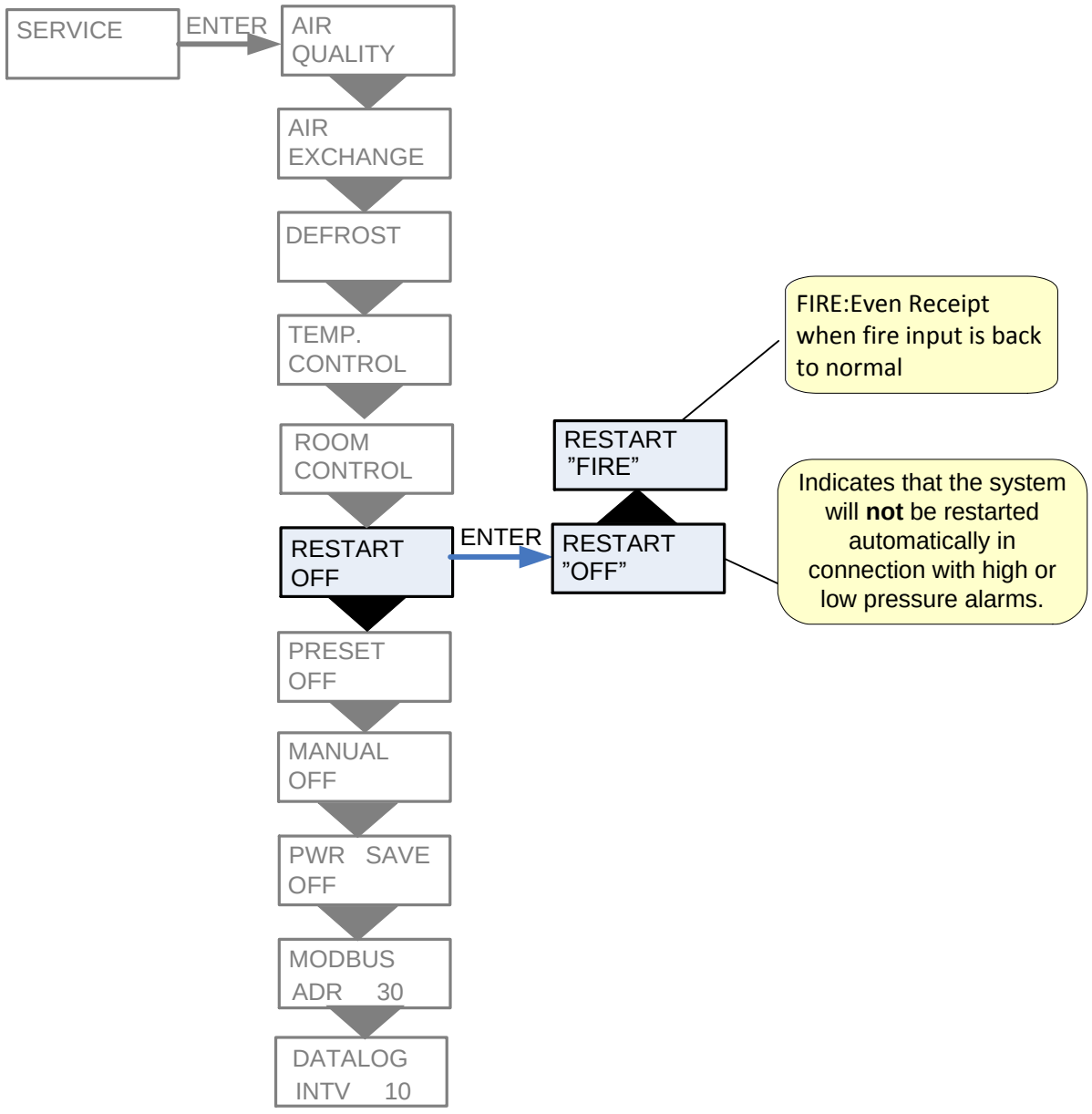


Figure 24: The "Restart" menu

Preset

” ” indicates that the menu point flashes and can be set to another value.

RESTORE menu allows you to reload a copy of the installation setup.

By keeping the ESC + ▲ key pressed for 5 seconds a new menu item RESTORE appear, this is then acceptable / activated by pressing the ENTER

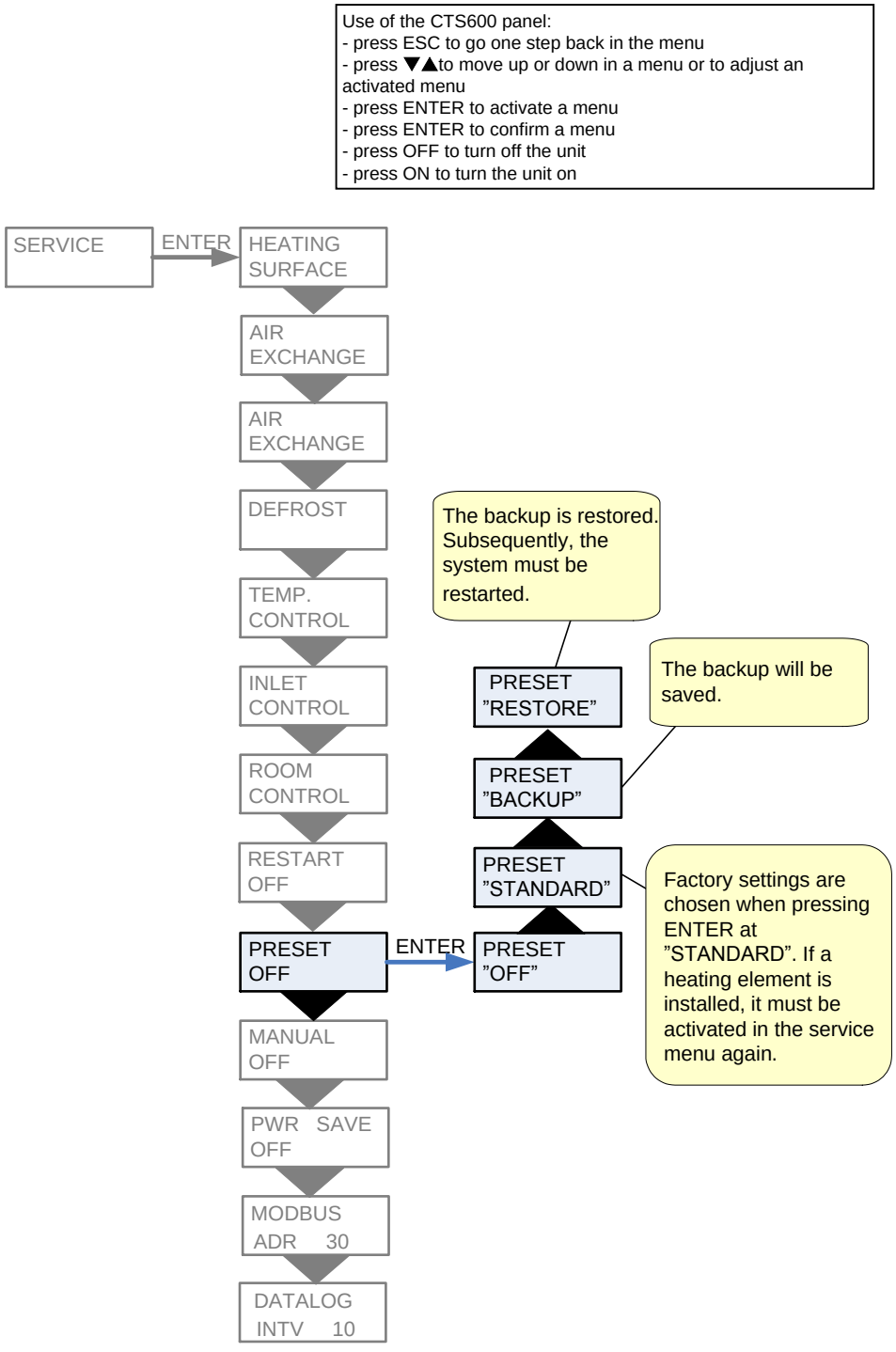


Figure 25: The "Preset" menu

Manual

In the ”Manual” menu it is possible to test the functions of the unit manually.

” ” indicates that the menu point flashes and can be set to another value.

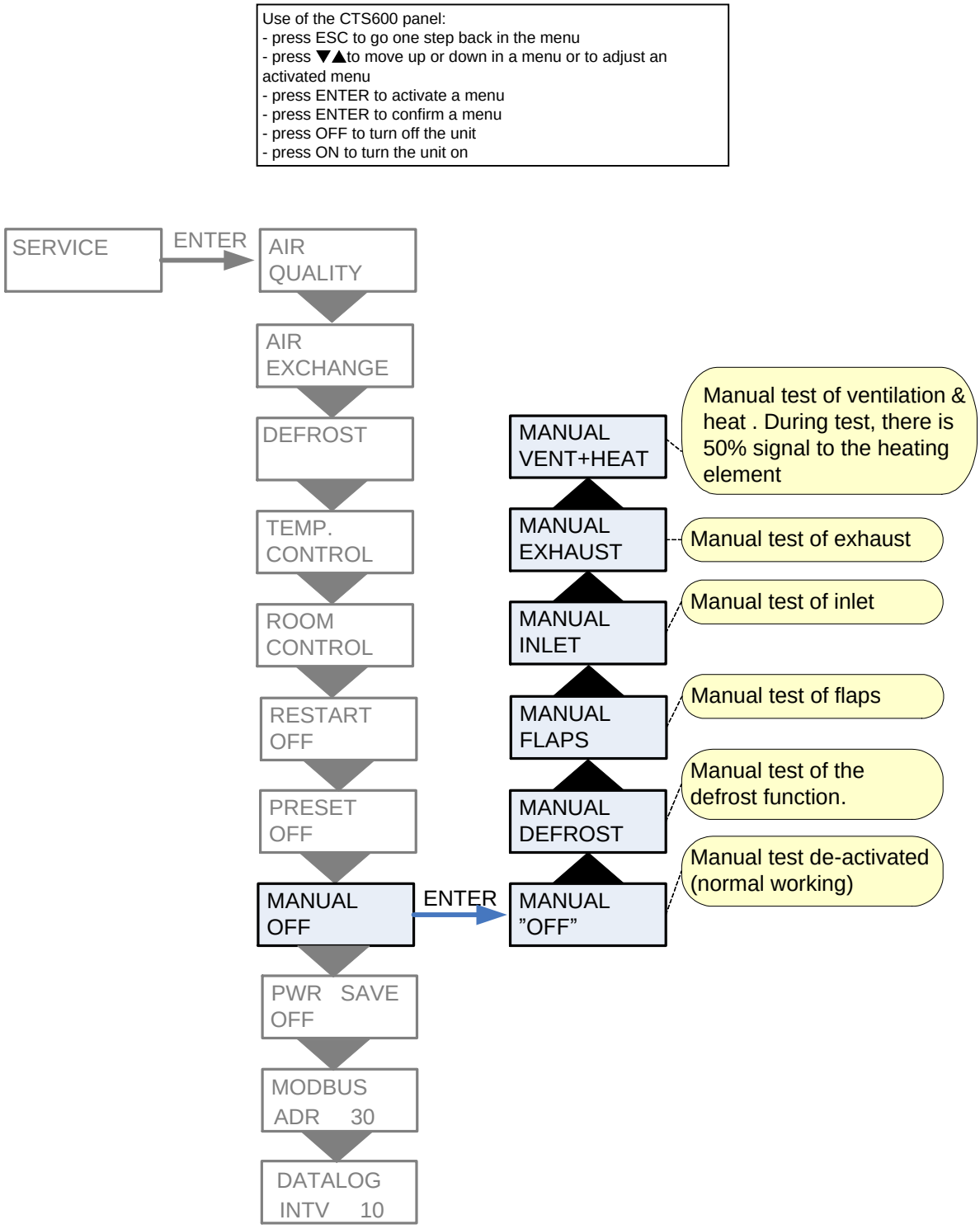


Figure 26: The "Manual" menu

PWR SAVE

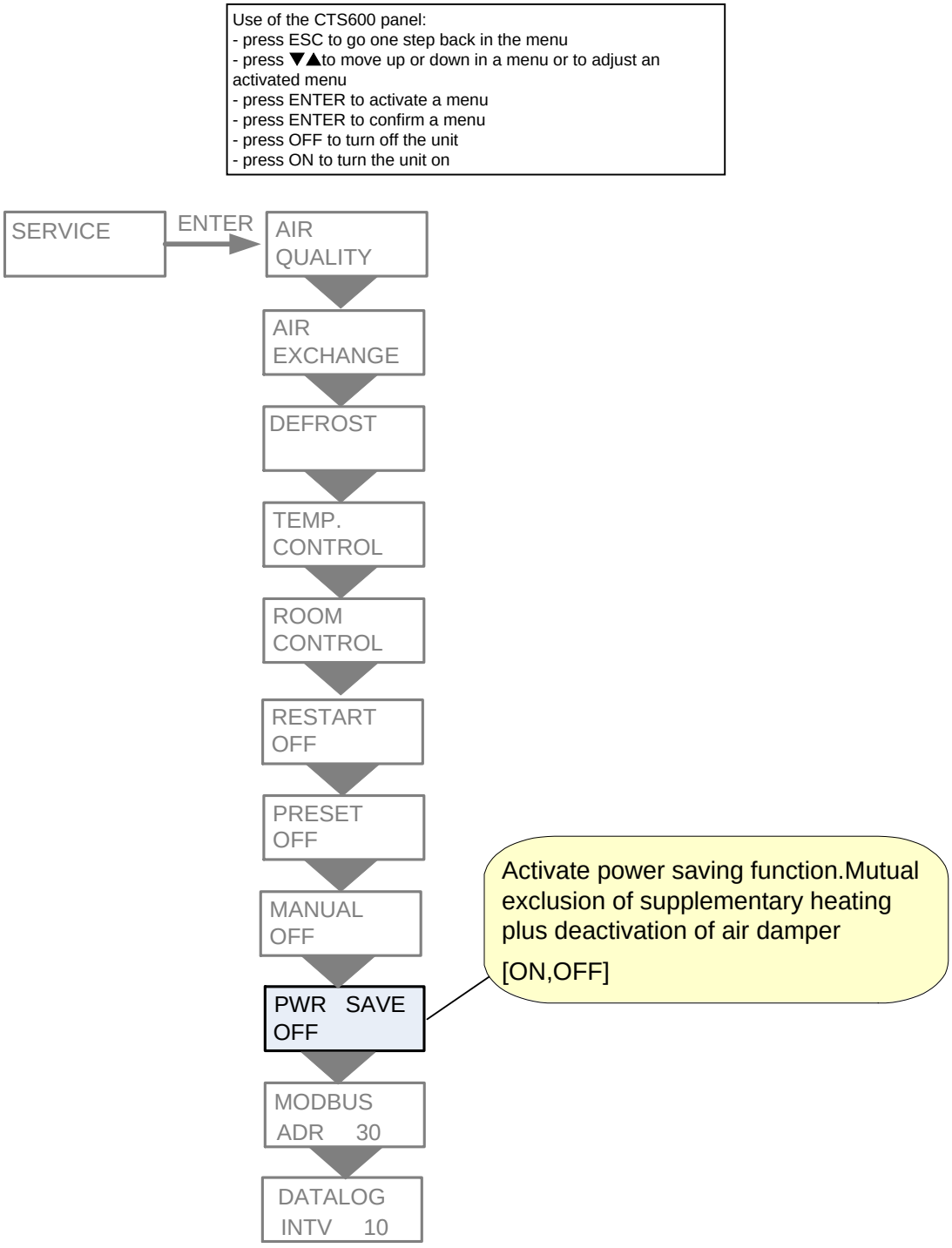


Figure 27: The "PWR SAVE" menu

Modbus

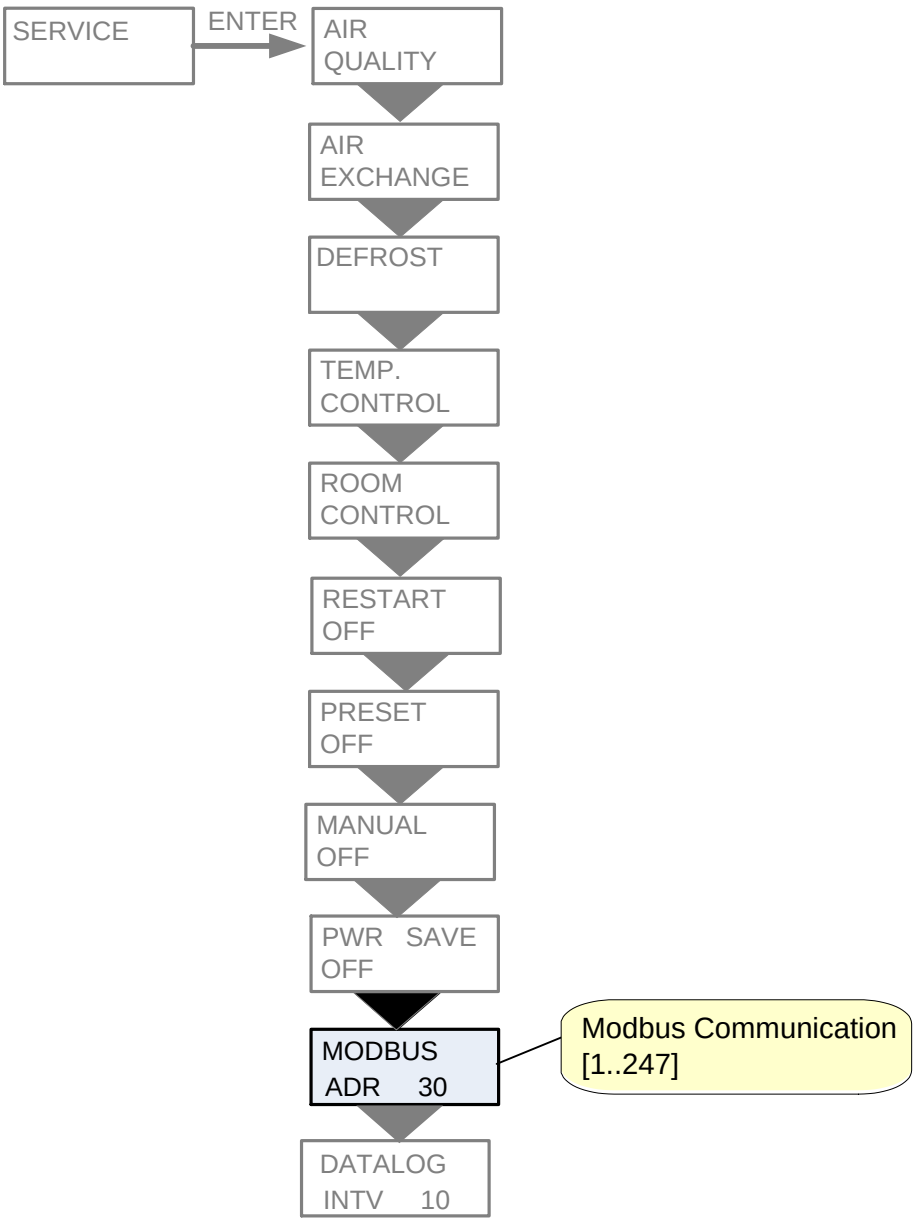


Figure 28: The "Modbus" menu

Datalog

The datalog interval is set via the menu SERVICE - DATALOG INTV at between 1 and 120 minutes.
If 0 / OFF is selected, logging is not periodical, but only on events and alarms.

- Temperatures are logged in Celsius, in whole degrees, in order to minimise the log file size.
- The status of digital inputs and outputs is combined in two shared log variables: ”Din” and ”Dout”.

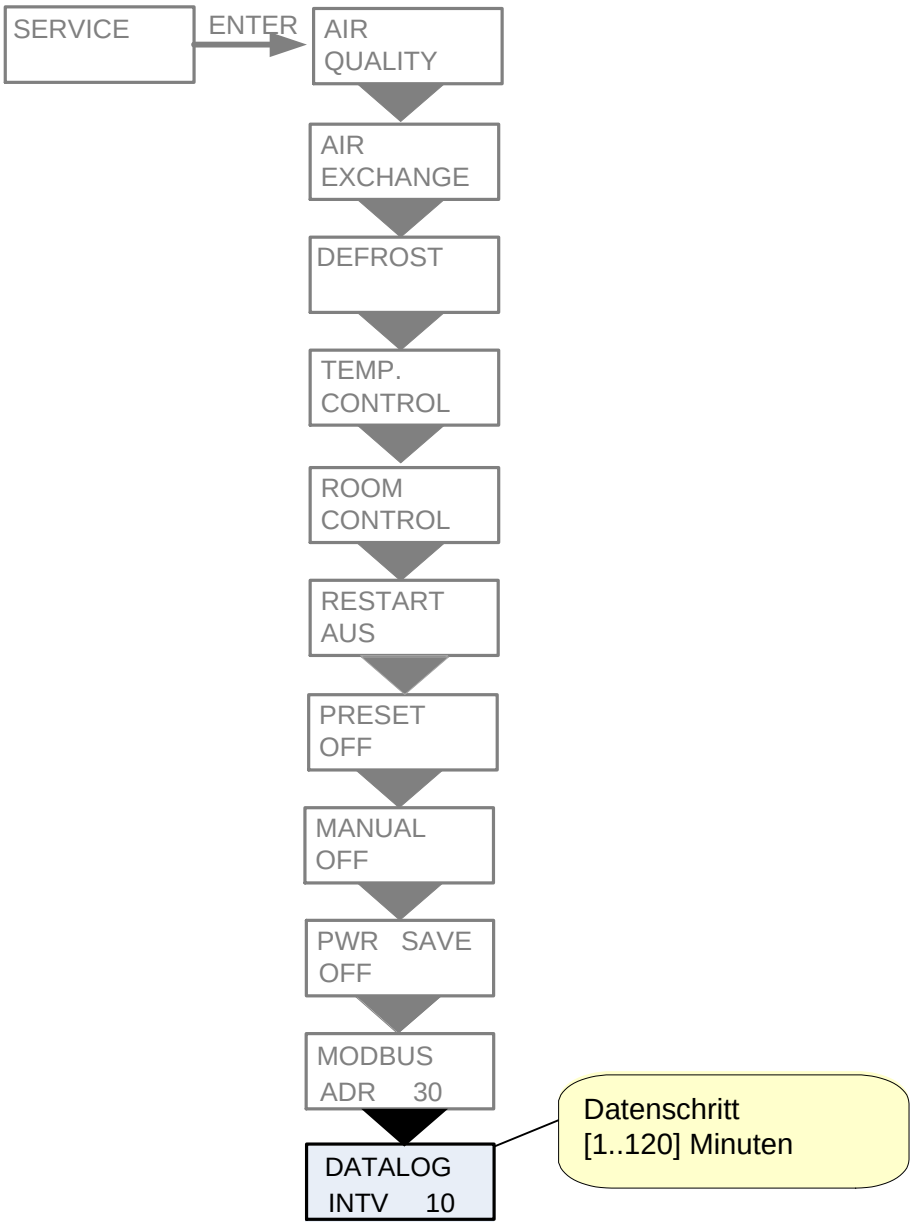


Figure 29: The "Datalog" menu